Remarks

The Applicants believe that this amendment places the subject application in better condition for allowance and in so doing introduces no new issues. Therefore, entry of this Amendment, reconsideration of the application, and allowance of all claims pending herein is respectfully requested.

Claims 1-31 were originally presented in the subject application. By the foregoing amendment, claims 24 and 30 are amended. Support for these amendments is found in the claims as originally filed, so that no new search is required and no new matter has been added. Claim 27 is cancelled without prejudice or disclaimer. Claims 1-26 and 28-31 remain in this case.

The Examiner's concerns are addressed separately below in the order raised in the outstanding Office Action.

Rejections under 35 U.S.C. §101

Claim 30 stands rejected under 35 U.S.C. §101 as directed towards non-statutory subject matter. In response, this claim has been amended to recite the program code on a "computer readable medium" as kindly suggested by the Examiner, to obviate this rejection.

Rejections under 35 U.S.C. §103:

Claims 1-31 stand rejected under 35 U.S.C. § 103 as obvious over Kjallstrom (2002/0010655) in view of Carlin (2002/0093538). Each of the pending independent claims (1, 24, 26, 28, 29, 30 and 31) recite, among other things, methods or components for manipulating 3D images or objects at a client, applying luminosity characteristics to the 3D images or objects, and rendering, at the client, a photorealistic 3D view of the images or objects including the luminosity characteristics.

The Office Action states that "Kjallstrom does not expressly call for applying luminosity characteristic to the 3D image, and rendering a 3D view [of] a combined/integrated image including the luminosity characteristic. However, Carlin (paragraphs 0080 and 0153) teaches this feature. Therefore, it would have been obvious to one having ordinary skill in the art to incorporate the teaching as taught by Carlin into the system of Kjallstrom to provide luminosity or lighting characteristic to the 3D image/product, and to do so would at least permit the rendered images to appear photo-realistic (See for example, paragraph 0153, lines 5-7)."

This rejection is respectfully traversed.

In order to establish a prima facie case of obviousness, there must be some suggestion or motivation to combine the references cited for the case of obviousness. It is well settled that there is no such suggestion if, among other things, (1) one or more of the references teach away from the combination, (2) the proposed combination would render one or more of the cited references useless for its original purpose, or (3) the proposed combination would change the principle of operation of at least one of the references.

1. Carlin teaches away from the claimed invention.

Applicant respectfully further submits that at least one, if not both of the cited references teach away from the claims of the instant invention.

As discussed above, the above-referenced independent claims of the present invention recite methods and systems configured for enabling a user to manipulate and render 3D images which include luminosity characteristics and are otherwise photorealistic, at the client, rather than server level. Kjallstrom teaches neither the application of luminosity characteristics, as indicated in the outstanding Office Action, nor any other photorealistic image manipulation. Rather, this reference is ostensibly directed towards low resolution images, such as may be manipulated using a browser plug-in (see, e.g., Kjallstrom, par. 0035).

Carlin teaches a similar use of a client-level browser plug-in for image manipulation. Carlin states, in par. 0054, that his system includes "a typically modest [client] computer system running, most commonly, a browser program with a plug-in module" and that such a system "manipulates only modestly-sized, low resolution, (3D) objects and textures." Carlin also teaches, as indicated in the Office Action, the application of luminosity characteristics and the generation of photorealistic images. Carlin's luminosity and photorealism, however, are not provided at the client level, but instead are provided only at the server level. Applicants therefore respectfully submit that Carlin's failure to provide these features at the client level, despite his own teaching of client-level image manipulation, is a strong indication of the non-obviousness of Applicants' claimed combination. Moreover, the mere fact that Carlin chose to separate his high resolution and low resolution image manipulation in this manner serves to implicitly teach away from the claimed invention.

In addition, or in the alternative, Carlin explicitly teaches away from adding luminosity characteristics and/or photorealism at the client level. Carlin teaches that photorealistic rendering, including luminosity characteristics, should be provided at the server-level, rather than at the client-level, because relatively large computational power requirements, expensive and sophisticated graphics rendering software, and a large library of model files, may be most efficiently and effectively maintained, updated, and/or protected by experts at a centralized server. Carlin states, for example, that:

> [t]he specified scene parameters sent to a server computer--typically with great computational power in a computer system running one or more copies of a complex graphics rendering program--and is rendered (re-rendered) photo realistically, meaning the scene is re-created by substituting high resolution models and textures and lighting for the stand-ins used for scene design and preview, and by using a photorealistic rendering system like ray tracing, such that the desired custom scene is rendered with photorealistic fidelity, and then returned to the client computer for display (including by printing).
>
> In this manner the computational, and program, requirements of the user/viewer/client/prospective purchaser computer are minimized, while the expensive and sophisticated graphics rendering software that is normally maintained and updated by experts is resident only at the server (and/or allied) computer system. In this manner the movement upon the communications network of huge, multi-megabyte, blocks of high-resolution 3D model data of the depicted objects and scenes is precluded. The high-resolution digital models and textures--which are typically proprietary, and which are obtained at some expense--are maintained relatively securely at the server. Finally, in this manner any creative person who is connected to the network, and to the graphics image rendering service, may design and produce a "world-class" photorealistic image--such as for purpose of serving as advertising images--without having either dedicated access to, nor specialized expertise in, a sophisticated graphics image rendering system.

> The server-based rendering of the present invention permits the use of very large (high-resolution) models and textures, and allows such models to remain secure on the server. It would be very time-consuming and expensive (in a bandwidth sense) to download 50 MB of models for rendering on the client. Furthermore such downloads would compromise the security of the models, as they could then be stolen. Given that relatively inexpensive high-performance computers are now readily available and in use by business, it is the security and data transmission speed issues that are the real competitive advantage of server-based rendering in business applications. Also, keeping the large models and textures on the server allows for relatively easy maintenance of the database. If the high-resolution models were distributed, updating them to current versions would become very difficult and expensive. The system of the present invention that combines client rendering of small stand-in models and textures with server-based rendering of proprietary high-resolution models and textures is the best of both worlds.
>
> Features including lighting effects and highly detailed models of furnishings permit the rendered, composite images to appear photo-realistic. While design professionals will occasionally build or render their own models, such projects are very time consuming, and require hours of rendering time on personal computers.
>
> (Carlin, pars. 0055-0057, 0153)

Carlin further states that even in the event of advances in software and hardware, one would still want to maintain the high resolution models centrally, i.e., for server-level photorealistic rendering, for the various other reasons discussed above. (Carlin, pars. 0264-0265).

2. *The proposed combination would render at least one of the cited references useless for its original purpose.*

If the proposed combination would render the cited device unsatisfactory for its intended purpose, then there is no suggestion to make the proposed combination. As discussed above, a stated purpose of the Carlin patent is to render photorealistic images, including luminosity characteristics, at a server-level. Carlin teaches that effecting these operations at the server-level provides various benefits, including simplified management of various resources such as processing power, graphics software, and model files. As such, modifying Carlin as suggested, to apply luminosity and photorealism at the client-, instead of server- level, would destroy a fundamental premise of the Carlin patent and render it useless for its intended purpose of providing centralized, secure, remote rendering of high resolution images.

3. *The combination would change the principle of operation of at least one of the references.*

A modification which would change the principle of operation of a reference would not be obvious. "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)." MPEP 2143.02 at 2100-132. The *Ratti* court reversed an obviousness rejection because the suggested combination of references would require "a substantial reconstruction and redesign of the elements . . . as well as a change in the basic principle under which the [primary reference] construction was designed to operate. 270 F.2d at 813, 123 USPQ at 352." MPEP 2143.02 at 2100-132.

As discussed above, Carlin's principle of operation is to provide remote rendering of photorealistic images, to provide various benefits associated with the centralization of processing power and software models for convenient maintenance, security, etc. This principle of operation would be changed (or eliminated) in the proposed combination.

CONCLUSION

For at least the foregoing alternate reasons, Applicants respectfully request reconsideration and allowance of the pending independent claims (1, 24, 26, 28, 29, 30 and 31). The dependent claims are believed allowable for the same reasons as the independent claims from which they depend, as well as for their own additional limitations.

Applicant therefore further submits that all of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot.

This application is now believed to be in condition for allowance, and such action at an early date is respectfully requested. However, if any matters remain unresolved, the Examiner is encouraged to contact the undersigned by telephone.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 50-0734** referencing docket no. 1193001. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

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